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chiefly at one, it is true. A more unscientific and unlovely spectacle it would be hard to find, than this disparagement of fifty or sixty other botanists because they choose to honor, however slightly, one whom she dislikes. Such bitter personalities only awaken compassion and stir regret; they are now-a-days unworthy of rejoinder.

CURRENT LITERATURE.

A Cuban text-book on botany.

An interesting phase of development of botanical teaching on this side of the Atlantic, is denoted by the recently issued text "Elementos de Botánica" part 1, by Dr. Juan Vilaró Diaz, of the University of Havana.

In a lengthy preface, Dr. de la Maza states that the work is called out by the want of a text in Spanish, and by the fact that foreign texts use, for illustration of plant phenomena, forms with which the Cuban student can not become familiar, and are otherwise unsuitable to accompany the courses of lectures in natural history offered in that University. Quite naturally he holds that the student can derive more practical advantage and general instruction from a study of the "forms that live in the beautiful climate of the magnificent Antilles."

The author divides the subject into static and dynamic botany. The volume just issued is concerned with the first, which it considers under the heads of cellulography, anatomy, morphology, embryology.

The relationship of the cell constituents is clearly outlined, and the author extends the text to include brief discussion of phases of the behavior and products of protoplasm, which do not usually find a place in elementary works. As an instance, under colors are paragraphs on pigments, origin and biological significance of colors, illumination, etiolation, protective colors, preventive colors, sexual colors typical colors, and attractive colors.

Throughout the entire work, forms and their relations are correlated with the more general functions of the organs in a manner that is very attractive. The economic relations of the plant are everywhere touched upon, and the author makes quite an excursion into the "tropisms," movements and carnivorous action. Under the latter head a cut and some interesting matter on the carnivorous action of *Pinguicula*, is taken from the U. S. Fish Commission report for 1885.

It could not be expected that the author of a pioneer text in such a musical language, would deny himself the privilege of introducing some new terms into our hazy terminology. He has, however, but

sparingly availed himself of the privilege so far, a self-denial it is hoped he will be able to sustain in the second part now in preparation, on physiology. In the present volume he introduces three terms coined by Dr. de la Maza, viz., *embriobroma*, the albumen of the seed, *embriobroma nucleogénito*, the perisperm of Schleiden, *embriobroma saccagénito*, the endosperm of Schleiden.

The breadth of thought, arrangement of matter, free compilation and simple direct style of the writer go to make up a text, that can but awaken enthusiasm among the students for whom it is intended. In conjunction with the high grade of teaching which the author represents, it will carry such inspiration, that we may hope soon to see a group of earnest workers at the University of Havana, who amid the rich flora of this tropical region, may accomplish much, especially in the domain of plant ecology.

The text is largely adapted after van Tieghem, the illustrations are from drawings by the author, Sachs, Reinke, and others. The publishers have done scant justice in this matter, while the usefulness of the book is materially lessened by the absence of a table of contents. It is but proper to say, however, that the book has some features that could be introduced into American texts to their distinct improvement.—D. T. MACDOUGAL.

Recreations in botany.

Our readers will bear us witness that we have cordially welcomed every attempt to restate the more recondite matters of botany in such fashion as to render them more easily understood and more interesting to those who were not botanists. If we have occasion to criticise severely some attempts in this direction, it is because they are made without the scientific knowledge and literary ability which are the precedent conditions to successful popularizing of botany. We again express the hope that some of our well-trained botanists will devote a little of their time and energy to the popular exposition of the science. They owe this to their day and generation. The book before us is an attempt to do a desirable thing, for which the author deserves praise, but it is to be regretted that she was so poorly equipped for the task. The text of these "recreations in botany"¹ appeared first as a series of articles in *Harper's Bazar*. It is a pity that some good friend of the writer did not advise her to let them die with that ephemeral life, rather than permit rejuvenescence in the form of a book. More or less pertinent illustrations have been gathered from the storage vaults

¹CREEVEY, CAROLINE A.—Recreations in botany. Small 8vo. pp. xiv+216. figs. 61. New York: Harper & Bros. 1893.

of the Messrs. Harper, and some decidedly original ones added by the author. The latter, and some of the others are crude, ill-drawn, and even grotesque caricatures of what is intended, made all the worse looking by comparison with the graceful and artistic work of Hamilton Gibson and Alfred Parsons.

The writer is evidently a lover of flowers and familiar with many of the flowering plants of the Atlantic region. In chapters relating to these she is at her best; but when she turns to physiology or to the lower plants, she writes a sorry mixture of fact and fancy. Even her facts seem to have been put into a kneading machine and thoroughly incorporated; and they are fed out often without the least reference to their relations.

Some of the opening sentences of the book are calculated to give a botanist cold shudders. Witness: "The pursuit of botany ought to be ranked as an outdoor sport." "For (and this is one of the points I wish to emphasize) botany is the easiest of all the sciences and can be engaged in without a teacher." Which she has too evidently done.

The chapter on plant movements furnishes some queer information: "The boat-shaped desmids and diatoms jerk themselves over considerable distances. The cilia (hair-like processes) of some mosses move about in water. *Oscillaria* are curious one-celled plants, which, under the microscope, look and wriggle like angle-worms." But it is when the cryptogams are reached that the author flounders most hopelessly. These plants, she says, "possess this advantage over our garden plants, that many of them can be studied in winter." "In such plants the sap does not circulate, but water passes freely though the cell walls." "*Azolla* looks like a creeping moss or liverwort." "Being small, many of them invisible to the naked eye, they [mosses] do not need a fibrous skeleton." In the scale-mosses "mixed with the spores are elaters, called macrospores." "The scale-mosses under a microscope look like lizards or curiously shaped reptiles." Speaking of the lichens she says, "the gonidia, a layer of green cells in the thallus, under a transparent cover called the hypha, divide each one into two, and form new plants. They are parasitic upon the lower layer of the thallus."

The algæ seem to be if possible less understood by the author than other groups. Speaking of algæ in general, "the spores," she says, "have a tendency to divide into four parts and are called tetraspores. They are provided with cilia either in pairs or all around their ball-shaped bodies. . . . Each cell seems capable of propagating two new plants by division. Another remarkable means of propagation is by 'conjugation'." "Many algæ are edible. The dulse of the Scotch

and the tangle of the Swede are made from algæ." "Zygnemas are composed of long tubes joined together by short ones, all marked with beautiful spirals or crosses, or other regular figures. They are large confervæ, and are found in great numbers fifteen thousand feet up the Himalayas, in the cold springs which rise from the glaciers." "The famous red-snow . . . is a cell containing starch and nitrogen; in other words protoplasm. . . . An allied alga is the *Pamella* (sic) *cruenta*, deep red in color, found on stale bread and meat, or upon musty walls of houses."

We cannot forbear one further quotation, since these are more for the delectation of our readers than as a justification of our criticism. "The ferment-mould inhabits liquids—wines, ciders, vinegars, and the like. The story is told of a man who placed his cask of wine in the cellar to age. Some time afterwards, when he attempted to open the cellar-door, it was blocked by great growths of fungus. The cellar was literally filled with the fungus, which had reveled in the wine leaking from the cask. The empty cask was lifted on top of the fungoid growth to the ceiling. This is the famous fungus found in the London docks, swinging and waving like gigantic cobwebs."

Miss (or is it Mrs.?) Creevey declares, at the end of her book, that "the object of the foregoing chapters has been, not a scientific treatise on botany, but to show how comparatively simple and easy it is, and what a pleasure it is, to know something—a great deal—about plants." This naiveté recalls the apt rebuke of an American humorist, "It's better not to know so many things than to know so many things that ain't so."

It would have been better for the author (and for the world) if she had not been so impressed with the idea that "it is as a recreation, a summer amusement, that the pursuit of botany is earnestly recommended." We recommend her to suppress this book and to give her undivided attention to botany for a series of years before she again ventures to popularize it.

It is not so remarkable that ignorance and confusion of ideas should exist; it is amazing that they should so frequently get into type. We are surprised that the Messrs. Harper would allow such a publication to bear their imprint.

OPEN LETTERS.

The botanic annual.

In the October issue of the GAZETTE Mr. W. T. Swingle presents a number of remarks on the idea of having an annual report on American botanical literature. The outcome of Mr. Swingle's consideration